

# *Bathydoris clavigera* Thiele, 1912: Redescription of the Undissected Holotype, and the Synonymy of *B. obliquata* Odhner, 1934

by

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*Abstract.* The external morphology and anatomy of the hitherto undissected holotype of *Bathydoris clavigera* Thiele, 1912, are described. A comparison with the type material of *B. obliquata* Odhner, 1934, shows that the latter species is synonymous with *B. clavigera*.

## INTRODUCTION

THIELE (1912) described a specimen of the genus *Bathydoris* which is similar to *B. hodgsoni* Eliot, 1907. According to ELIOT (1907), the latter could be distinguished from *B. clavigera* by the smaller dorsal papillae and the position of the gills. Because of the great similarity of these two species of *Bathydoris*, Thiele decided not to dissect the only specimen of his new species. This led to the fact that recently found specimens have never been discussed in connection with *B. clavigera*, only with *B. obliquata*, a species described much more thoroughly by ODHNER (1934). An examination of the anatomy of the holotype of *B. clavigera*, therefore, is essential for a revision of the genus *Bathydoris* and for the classification of the newly found bathydorids (Wägele, in preparation). Unfortunately a complete anatomical investigation was impossible because of the gelatinous consistency of the viscera, owing to poor preservation.

## MATERIAL

Holotype of *Bathydoris clavigera*: Zoologisches Museum Berlin. Holotype and one paratype of *B. obliquata*: British Museum (National History) London, No. 1934.10.5.75.

## EXAMINATION OF

### *Bathydoris clavigera* HOLOTYPE

**External morphology:** According to THIELE (1912) the length of the living animal was 90 mm and the breadth 50 mm. The preserved animal is 55 mm long and 26 mm broad, and has a gelatinous consistency. Since Thiele figured only the lateral view of the body, the dorsal view of

the external form of the dark grayish-brown animal is represented in Figure 1A. The rhinophores are rather long and thick.

There is a gill plume on the right side of the mediodorsal anal papilla, consisting of three tripinnate gills, which are almost entirely detached from the notum.

The genital papilla has two distinct openings. The male opening lies on a small papilla, and the oviducal opening is covered by a tongue-like process (THIELE 1912:pl. 19, fig. 2).

**Digestive tract:** The oral tube is short and terminates at the labial disc, the protruded entrance to the strong pharynx. The thin cuticle of the labial disc, which is connected to the jaws, has a hairy appearance on the outer side. The straight masticatory edges of the light brown jaws are dark brown and connected with each other by membranes (Figure 1E, arrow). The radula (9 × 7 mm) has the formula: 35 × 50·1·1·1·50. The teeth are brown, whereas the membrane of the radula is yellow. The median tooth is broad and has no pronounced lateral cusps (Figure 1F). The cutting edge is very thin and irregularly serrate. The first laterals are broad, the following ones narrower. The length of their cusps increases in the following six teeth and decreases in the last five to 10 laterals. The cusps are very long compared to the tooth base (Figures 1F, G). The 38th lateral on the right side has a bifid cusp with an additional denticle (Figure 1H). The first laterals have a small denticle (Figure 1F) and several irregular serrations.

The large salivary glands cover most parts of the anterior esophagus (Figure 1B). They open into the latter by small ducts, which are dilated into ampullae at their proximal ends. The esophagus arises posterodorsally from the

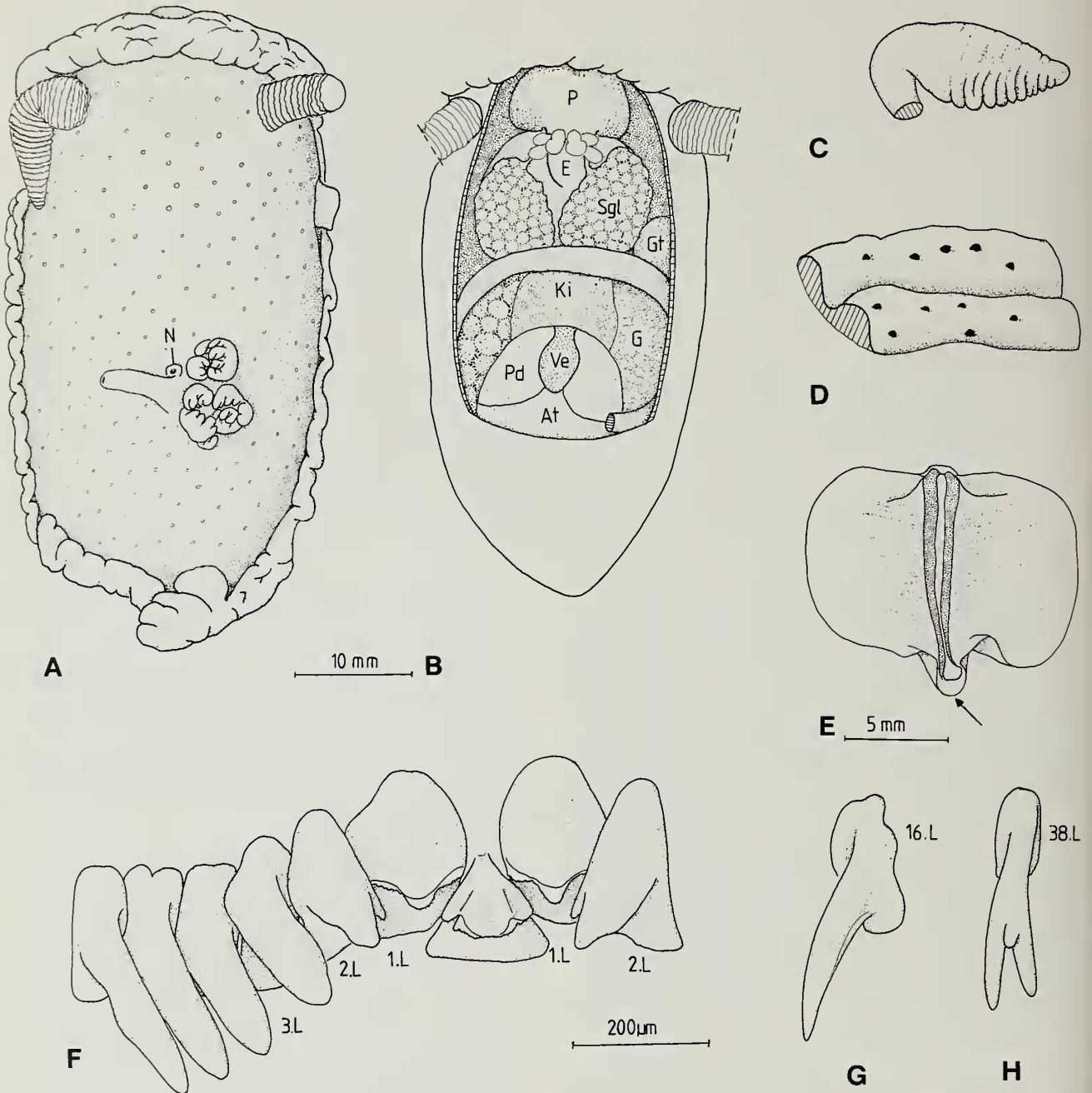


Figure 1

*Bathydoris clavigera*, holotype. A. External features. B. Organs in situ. C. Penis. D. Two folds of the posterior part of the esophagus with cuticularized cones. E. Jaws, still connected by membranes (arrow). F. Teeth from center of 10th row. G. Lateral, 5th row. H. Lateral with anomaly, 5th row. Key: At, atrium; E, esophagus; G, gonad; Gt, genital tract; Ki, kidney; N, nephroproct; P, pharynx; Pd, pericardium; Sgl, salivary gland; Ve, ventricle.

pharynx as a thin duct, leads to the right side, then distends into a sac-like structure. This anterior part of the esophagus is lined by longitudinal folds, which are masked by many smaller transverse folds. These folds are covered by

a thin, light-brown cuticle. The transition into the posterior part of the esophagus lies ventral to the digestive gland. This part only shows longitudinal folds with knoblike structures or cones (Figure 1D).

The transition from stomach to intestine and the presence of a caecum could not be examined. The intestine traverses the viscera from the left to the right side and opens posteriorly at the anal papilla.

**Nervous system:** The cerebral ganglia of the poorly preserved nervous system are round and a division into halves by a notch is hardly visible. The rhinophoral ganglia are situated medially on the cerebral ganglia. The distinct pleural and pedal ganglia are connected with the cerebral ganglia by short, hardly visible connectives. Three sub-esophageal commissures of equal length could be identified (pedal and parapedal commissure, visceral loop). The large buccal ganglia are widely separated from each other. Gastro-esophageal ganglia could not be identified. Because of the loss of pigment, the eyes were found only after a careful examination at the base of the rhinophores.

**Genital system:** The genital system is in a very poor condition. Therefore, dissection has not been attempted, except for the penis, which has an elongate, flattened, slightly conical shape. Its surface is more or less smooth and shows folds only on one side (Figure 1C).

**Further organ systems:** There is no blood gland or a gland in the atrium. The heart lies more or less symmetrically on the viscera (Figure 1B).

#### DISCUSSION

Up to now 11 species of *Bathydoris* have been described, six of them from Antarctic waters: *B. clavigera*, *B. hodgsoni* Eliot, 1907, *B. inflata* Eliot, 1907, *B. brownii* Evans, 1914, *B. obliquata* Odhner, 1934, and *B. vitjazi* Minichev, 1969. Only *B. obliquata* shows a radula similar to that of *B. clavigera*: the first lateral is clearly distinct in size and shape from the other laterals. According to the descriptions of ODHNER (1934) and the results of a re-examination of

the holotype of *B. obliquata*, the external morphology (*e.g.*, length of rhinophores) and the anatomy (hairy appearance of lip cuticle, shape of radula and teeth, existence of eyes) are virtually identical. *Bathydoris obliquata* differs from *B. clavigera* only in the position of a second gill in front of the anus. Because of the poor condition of the notum in the specimen of *B. clavigera*, the presence of a second gill in front of the anus cannot be discounted. According to this study and the results on fresh material from the Weddell Sea (Wägele, unpublished data) it can be concluded that these two species are synonymous in spite of the differences in their gills.

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